

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An injection molding apparatus comprising:
a mold body having a cavity for forming a hollow molded plastic part, the mold body having an upstream end and a downstream end;
a runner for supplying fluid plastic from a source of fluid plastic to said the upstream end of the cavity;
at least one fluid injection pin mounted to said mold body at a point adjacent to the downstream end and connectable to a pressurized fluid source;
a reservoir positioned remote from said cavity and selectively connectable to said runner; and
a valve positioned between the reservoir and the adjacent a mouth of said runner, said valve being operable between a first state at which said reservoir is fluidly connected to said runner to allow a central portion of the fluid plastic injected into and filling the mold cavity to be expelled from the mold into the reservoir by the pressure caused by the introduction of fluid from the pressurized fluid source through the injection pin after the mold has been filled in order to form a hollow plastic part, and a second state at which said reservoir is blocked from fluid communication with said runner when the fluid plastic is being injected into the mold cavity.

2. (Cancelled)

3. (Currently Amended) The injection molding apparatus of claim [[2]] 1 wherein said gate directs fluid plastic into said mold cavity in a substantially downstream direction during a plastic injection cycle, and said at least one fluid injection pin directs fluid into said mold cavity in substantially upstream direction during a plastic ejection cycle.

4. (Original) The injection molding apparatus of claim 1 further comprising actuating means for operating said valve member between said first and said second state.

5. (Original) The injection molding apparatus of claim 4 wherein said valve is hydraulically actuated.

6. (Original) The injection molding apparatus of claim 4 wherein said valve is pneumatically actuated.

7. (Original) The injection molding apparatus of claim 4 wherein said valve is electromechanically actuated.

8. (Original) The injection molding apparatus of claim 1 wherein a volume of said runner is greater than or equal to a volume of plastic ejected from said cavity by fluid injected through said at least one fluid injection pin.

9. (Cancelled)

10. (Original) The injection molding apparatus of claim 4 wherein said valve is electromechanically actuated.

11. (Original) The injection molding apparatus of claim 1 wherein said reservoir has a selectively variable volume.

12. (Currently amended) A process for injection molding of ~~fluid-filled~~ hollow plastic bodies in an apparatus having a mold cavity with an upstream end and a downstream end and a fluid reservoir, the process comprising the steps of:

~~injection~~ injecting a quantity of fluid plastic into an interior of the mold cavity through a supply passage located at the upstream end of the mold cavity;

cooling part of the plastic melt along walls of the mold cavity, thereby providing an interior of fluid, plastic melt;

injecting fluid from the fluid source into the interior of fluid, plastic melt at the downstream end of the mold cavity; and

selectively expelling at least a portion of the interior of fluid, plastic melt ~~into~~ back through the supply passage ; and

~~selectively expelling at least a portion of fluid plastic from the supply passage~~
into the fluid reservoir which is connected to the supply passageway.

13. (Cancelled)

14. (Cancelled)

15. (Cancelled)

16. (Cancelled)

17. (Currently Amended) A process for injection molding of hollow articles in an apparatus having a mold cavity with an upstream end and a downstream end and a reservoir, the process comprising the steps of:

injecting fluid plastic into an interior of the mold cavity through a supply passage located at the upstream end of the mold cavity ~~the apparatus~~;

injecting a pressurized compressible fluid into the fluid plastic at the downstream end of the mold cavity, the fluid forming a pocket of pressurized fluid therein;

substantially maintaining the compressible fluid at a predetermined pressure in the mold for a predetermined duration; and

selectively connecting the mold cavity to the reservoir which is located off the supply passage at the upstream end of the mold cavity, so that a portion of the fluid plastic flows upstream to the reservoir.

18. (Original) The process of claim 17 wherein the predetermined duration is about two seconds to about ten seconds.

19. (Original) The process of claim 17 wherein the step of selectively connecting the mold cavity to the reservoir includes actuating a control valve to fluidly connect the mold cavity therewith.

20. (Original) The process of claim 17 wherein the portion of fluid plastic flows to the reservoir in a downstream direction.

21. (Original) The process of claim 17 wherein said portion of the fluid plastic flows from the mold cavity in the direction of said injection of fluid plastic.

22. (Original) The process of claim 17 wherein said portion of the fluid plastic flows from the mold cavity in a direction opposite to the direction of said injection of fluid plastic.

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)

26. (Cancelled)

27. (Cancelled)

28. (Cancelled)

29. (Cancelled)

30. (Cancelled)

31. (Cancelled)

32. (Cancelled)

33. (Cancelled)

34. (Cancelled)

35. (Cancelled)

36. (Cancelled)

37. (Cancelled)

38. (Cancelled)

39. (Cancelled)

40. (Currently Amended) A process for injecting molding a hollow plastic article in an apparatus having a mold cavity with an upstream end and a downstream end and a reservoir, the process comprising the steps of:

(a) injecting a quantity of fluid plastic material into a mold cavity via a supply passage located at the mold cavity upstream end to substantially fill the mold cavity;

(b) applying a packing pressure to the plastic in the mold cavity;

(c) injecting pressurized gas into the plastic material in the mold cavity at the downstream end of the mold cavity in order to combine the application of packing pressure to the plastic;

(d) holding the pressure of the gas and plastic in the mold cavity for a predetermined amount of time; and

(e) allowing a portion of the plastic material in the mold to be expelled into ~~at least one secondary cavity~~ the reservoir coupled to the mold cavity by the supply passage opening in response to opening a valve located between the reservoir and the supply passage in a runner connecting the mold cavity to the secondary cavity.

41. (Currently Amended) The process as set forth in claim 40 further comprising the steps of:

(f) permitting the plastic material to solidify; ~~and~~

(g) ~~exhausting the gas from the mold cavity; and~~

(h) removing the plastic article from the mold.

42. (Previously Presented) The process as set forth in claim 40 wherein said plastic article has at least one section which is thicker than other sections and said charge

of pressurized gas is introduced into the thicker section in order to form a hollow portion therein.

43. (Previously Presented) The process as set forth in claim 40 further comprising the step of applying the packing pressure to the plastic material injection pressure in the mold cavity for a predetermined period of time prior to the injection of gas into the plastic material.

44. (Previously Presented) The process as set forth in claim 40 wherein portions of the plastic material are expelled into at least two secondary cavities.

45. (canceled)

46. (Previously Presented) The process as set forth in claim 40 wherein at least two secondary cavities are provided and the step of allowing a portion of the plastic material in the mold to be displaced into the secondary cavities comprises opening valve members positioned in conduits connecting the mold cavity with the secondary cavities.

47. (Previously Presented) The process as set forth in claim 46 further comprising the step of sequentially controlling the opening of the valve members in order to allow selective displacement of plastic material into the at least two secondary cavities.

48. (Currently amended) A process for injection molding a hollow plastic article in a mold cavity with an upstream end and a downstream end comprising the steps of:

(a) injecting a quantity of plastic material into the upstream end of the ~~[[a]]~~ mold cavity via a supply passageway to substantially fill the mold cavity;

(b) applying a packing pressure to the plastic in the mold cavity;

(c) injecting pressurized gas at the downstream end of the mold cavity into the plastic material in the mold cavity;

(d) holding the pressure of the gas and plastic in the mold cavity for a predetermined amount of time;

(e) allowing a portion of the plastic material in the mold to be expelled upstream into at least one secondary cavity coupled to the supply passageway ~~mold cavity~~;

- (f) permitting the plastic material to solidify; and
- (g) ~~exhausting the gas from the mold cavity; and~~
- ~~(h)~~ removing the plastic article from the mold.

49. (Previously Presented) The process as set forth in claim 48 wherein said plastic article has at least one section which is thicker than other sections and said charge of pressurized gas is introduced into the thicker section in order to form a hollow portion therein.

50. (Previously Presented) The process as set forth in claim 48 further comprising the step of applying the packing pressure to the plastic material injection pressure in the mold cavity for a predetermined period of time prior to the injection of gas into the plastic material.

51. (Previously Presented) The process as set forth in claim 48 wherein portions of the plastic material are expelled into at least two overflow cavities.

52. (canceled)

53. (Previously Presented) The process as set forth in claim 48 wherein the step of allowing a portion of the plastic material in the mold to be displaced comprises opening a valve member in a conduit connecting the mold cavity with the secondary cavity.